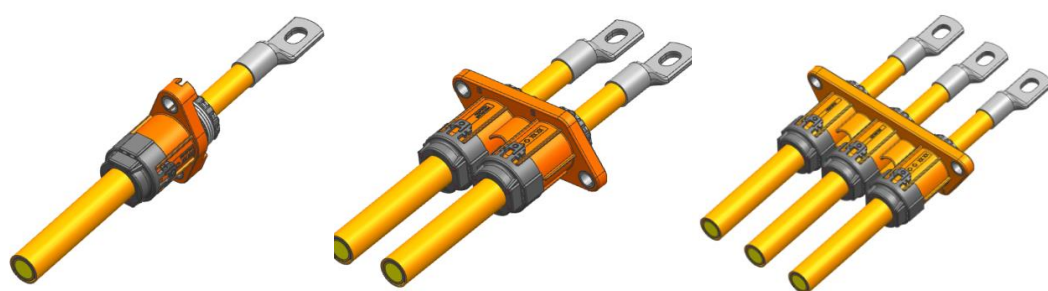


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Connection Systems

Product Specification

AK Pass through



AK Pass through contains 1way,2way and 3way with the different codes and types ,
The offer drawing exclude the ring terminal and cable

PS33376479
Rev. 01 – Apr 23, 2018

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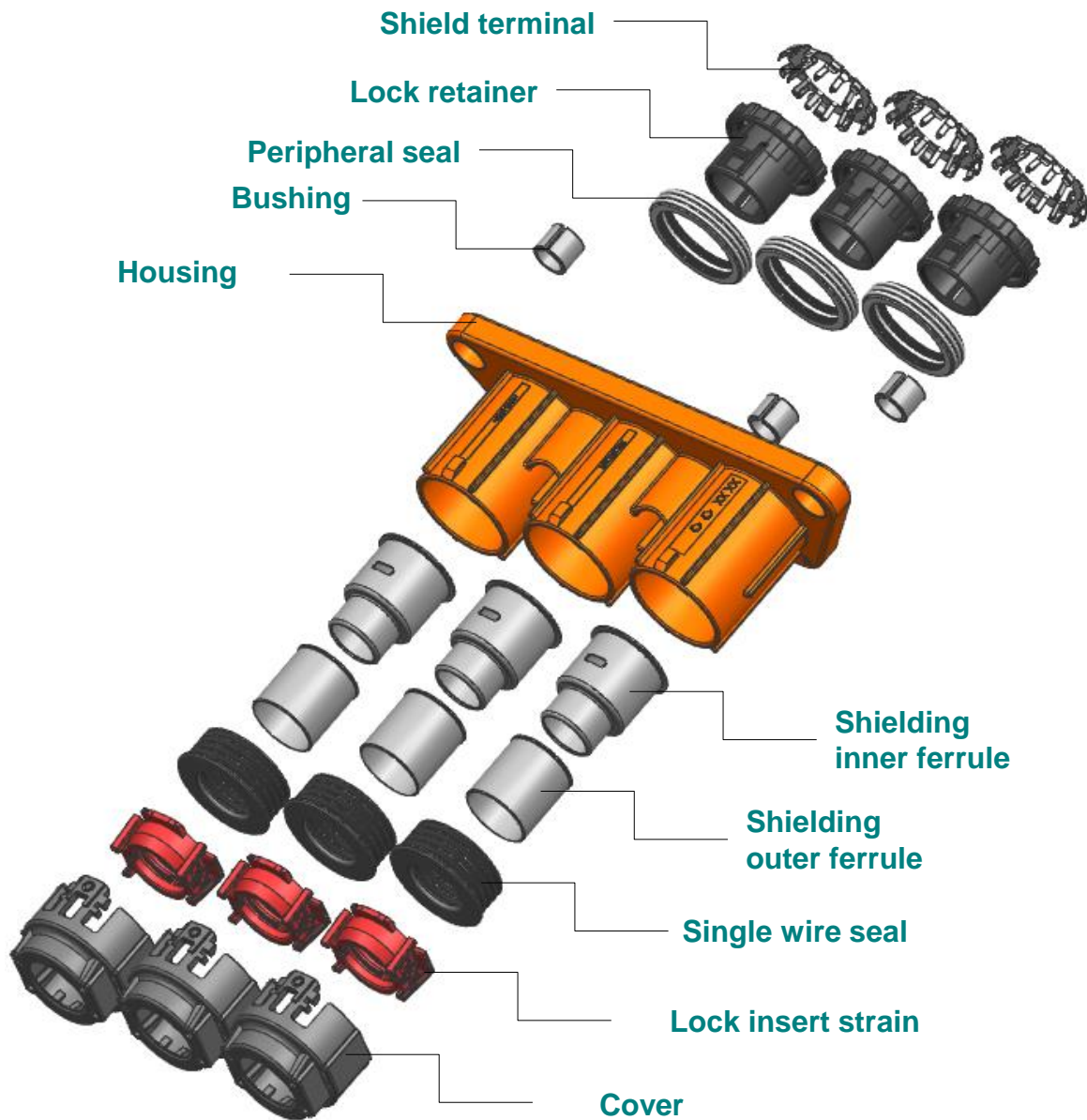
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EXPLODED VIEW



AK Pass through contains 1way,2way and 3way with the different codes and types, Above show offer components

!!! Pictures used in this Product specification and original parts may differ in some details, This difference has no influence on the assembly process !!!

1 General information

1.1 Introduction

This product specification contains:

Applicable documents, Technical information, Delivery status, and customer specification about the **AK Pass through Connection**

1.2 Applicable documents

- **Offer drawing** : 33376479-CME01-S01 and 33376479-CME01-S02
33376479-CME01-S03 ;
- **Assembly manuals** : 33376479-CUS72 –S01 and 33376479-CUS73 –S01 ;
- **Interface drawing** : 33376479-CDE01-S01 and 33376479-CDE01-S02
33376479-CDE01-S04 and 33376479-CDE01-S06 ;
- **Terminal drawing** : Recommend Ring terminal drawing 33115082
(Performance confirmed by supplier);
- **Standard specification reference** : LV123, LV214, LV215, LV216, VG 95214 -
11, DIN EN 60512, DIN EN 60068, ISO 20653 ;

2 Test requirements

Description	Test Procedure and condition	Requirement
Test Group 0 Inspection of as-received condition		
E 0.1 Visual inspection	LV215-2, DIN EN60512-1-1	Basic mechanical functions and no damage
E 0.2.3 Shielding volume resistance	LV215-1, DIN EN60512-2-1	Shielding contact: $R < 10 \text{ m}\Omega$
E 0.3 Insulation resistance	LV215-2, DIN EN60512-3-1 1000 V DC for each point	All $>200 \text{ M}\Omega$
E 0.4 Dielectric strength	J1742 60s by 3000VAC	No dielectric breakdown or flash-overs
Test Group 1 Dimensions		
E 1.1 Dimensions	LV214, DIN EN60512-1-2	Meet the released drawing or Product specification
Test Group 2 Material and surface analysis, contacts		
E 2.1 Material test of contact parts	LV214, IMDS system	Meet the released drawing or Product specification
Test Group 3 Material and surface analysis, plastic and seal		
E 3.1 Material test of parts	LV214, IMDS system	Meet the released drawing or Product specification
Test Group 6 Interaction between contact and housing		
B 6.1 Drop Test	LV214, DIN EN600068-2-31 : Drop from 1 m height	No function impairment for non-changeable components
Test Group 7 Handling and functional reliability of the housing		
E 7.4 Insertion force or actuation force for insertion and removal aids	LV214	$F \leq 100 \text{ N}$

*Continue at the next page .

2 Test requirements

Test Group 17 Dynamic load		
B 17.2 Dynamic load, broad-band random vibration	LV214, see the item 3.6	No function impairment
B 17.3 Endurance shock test	LV214 ,see the item 3.6	No function impairment
E 0.2 Contact resistance	LV214 ,DIN EN60512-2-1	Shielding contact :R < 10 mΩ
Test Group 18C Housing influence on the derating		
B 18.3 Salt spray,cyclic	LV214 ,DIN EN600068-2-52 Severity 3	No function impairment
E 0.2 Contact resistance	LV214 ,DIN EN60512-2-1	Shielding contact :R < 10 mΩ
Test Group 20 Climatic load for housing		
B 20.1 Dry heat	LV214, Dry heat 120h/140 degree	No function impairment
B 20.2 Humid heat,constant	LV214, DIN EN600068-2-30 10 day/40 degree / 95% rel humidity	No function impairment
B 20.3 Low-temperature aging	LV214, DIN EN600068-2-1	No function impairment
B 20.4 Removal and insertion at -20 degree	LV214	No function impairment
B 20.5 Aging in dry heat	LV214,DIN EN600068-2-2	No function impairment
B 6.1 Drop Test	LV214, DIN EN600068-2-31 : Drop from 1 m height	No function impairment for non-changeable components

*Continue at the next page .

2 Test requirements

Test Group 22B Chemical resistance		
B 22.1 Chemical resistance	LV214, Not tested with battery acid	No function impairment
E 0.3 Insulation resistance	LV215-2, DIN EN60512-3-1 1000 V DC for each point	All >200 MΩ
Test Group 23 Watertight		
B 19.3 Storage in dry heat	LV214, DIN EN600068-2-2 : 120h/140 degree	No function impairment
B 19.1 Temperature shock	LV214, DIN EN600068-2-14 : 144 cycles -40 degree/+ 140 degree each 15 min	No function impairment
B 23.1 Diving with pressure difference	LV214, DIN EN60512-14-5 ,see the item 3.5	No water intrusion
B 23.2 Conducting movement when diving with pressure difference	LV214, DIN EN60512-14-5 ,see the item 3.5	No water intrusion
B 23.3 Thermal shock test	LV214, 30 min in 120 degree ;15 min in 0 degree water cycles ,item 3.5	No water intrusion
B 23.4 Type of protection test / steam beam test - Degree of sharpness IP X9K	LV214, DIN 40050-9 ,see the item 3.5	No water intrusion
E 0.3 Insulation resistance	LV215-2, DIN EN60512-3-1 1000 V DC for each point	All >200 MΩ

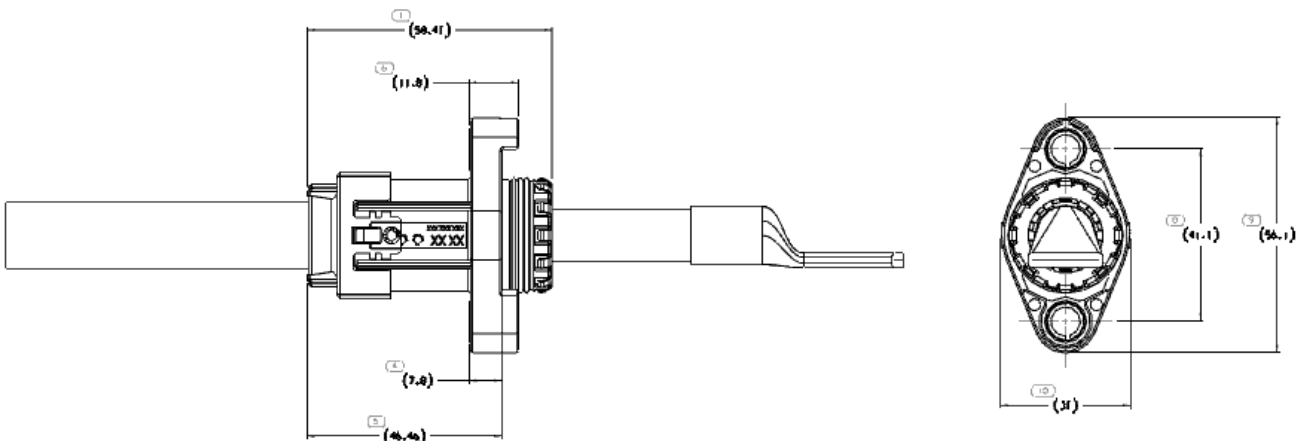
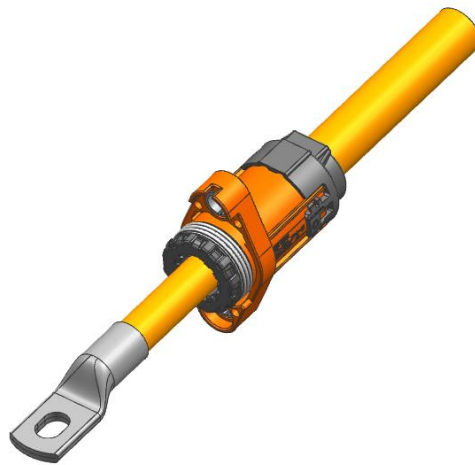
*Continue at the next page .

2 Test requirements

Test Group 50 EMC		
E 50.2 Surface transfer impedance	VG 95214-11, LV215-1, LV215-2 ,see the item 3.7	2 MHz < 10 mΩ; 30 MHz < 50 mΩ;
Test Group Additional Crimping for ferrule		
Retention force on the shielding cable	DIN EN60512-15-6	F > 300 N (Primary lock) F > 400 N (Primary lock +secondary lock) (special 16mm ² F> 180 N Primary lock)
Contact resistance	DIN EN60512-2-1	R < 1 mΩ for all

3 Technical data

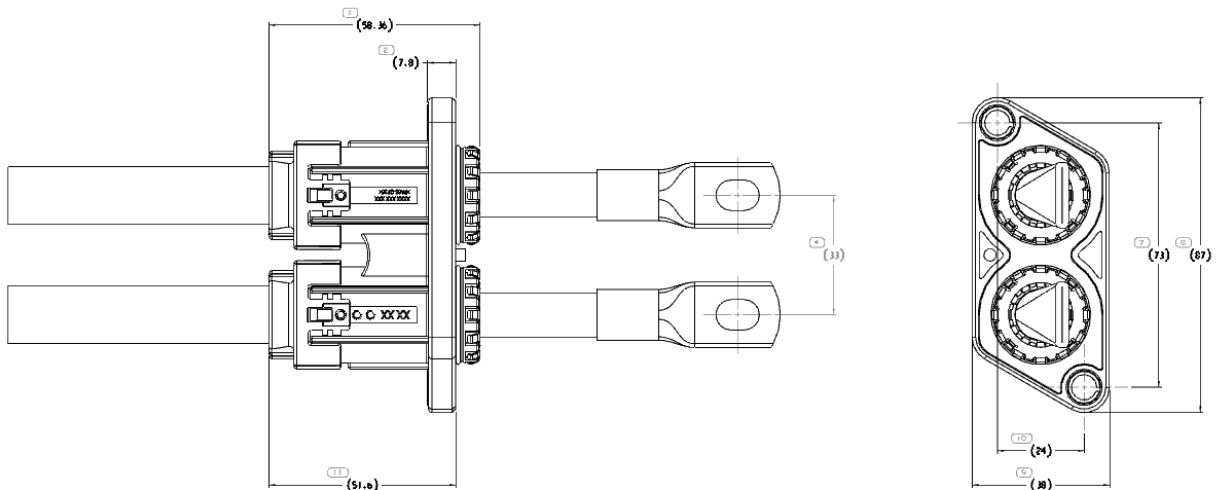
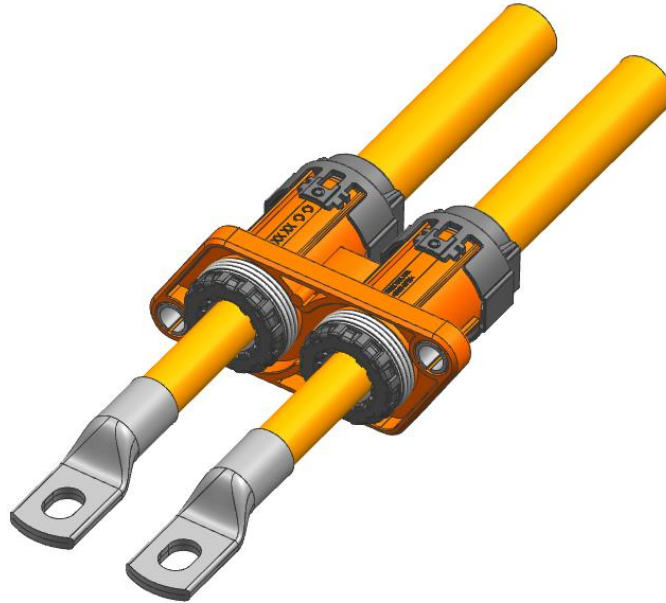
3.1.1 Typical Dimensions of the connector components



**AK Pass through contains 1way,2way and 3way with the different codes and types,
The offer drawing exclude the ring terminal and cable**

3 Technical data

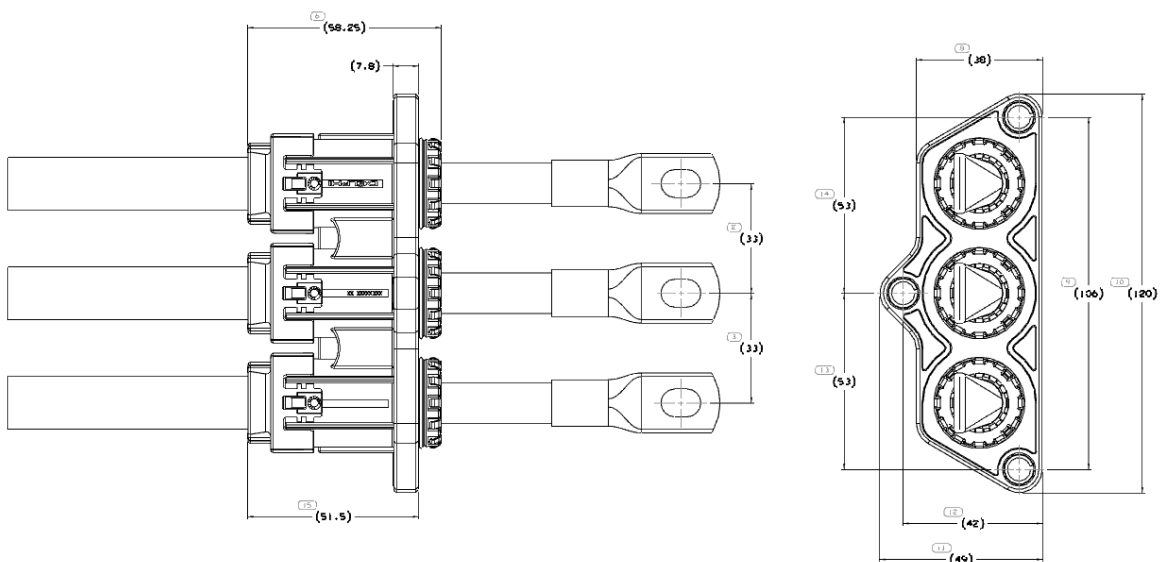
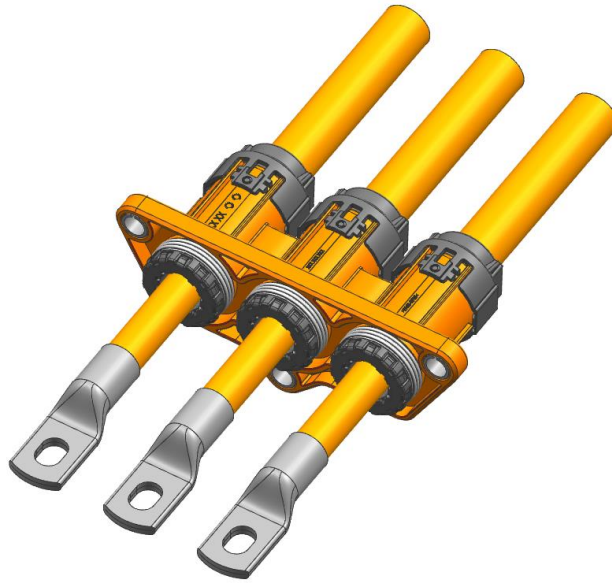
3.1.2 Typical Dimensions of the connector components



**AK Pass through contains 1way,2way and 3way with the different codes and types,
The offer drwing exclude the ring terminal and cable**

3 Technical data

3.1.3 Typical Dimensions of the connector components



**AK Pass through contains 1way,2way and 3way with the different codes and types,
The offer drawing exclude the ring terminal and cable**

3.2 Technical data sheet

Characteristics	Data
3.2.1 Physical:	
Number of positions	1&2&3
Terminal size/style	Ring terminal
Wire range	16mm ² - 50mm ² based on LV216-2
Wire connection direction	180 degree
3.2.2 Material:	
Main housing	PA66 GF35*
Main housing color	Orange
Main contact	Copper alloy and Ag plating
Main shielding	Copper alloy
Main seal	Silicone rubber
3.2.3 Mechanical:	
Mating cycles	50
Mating force	< 100 N
Retention force	> 300 N
Coding efficiency	> 220 N
Finger proof/touch safe	NA

*Contact responsible engineer for more information.

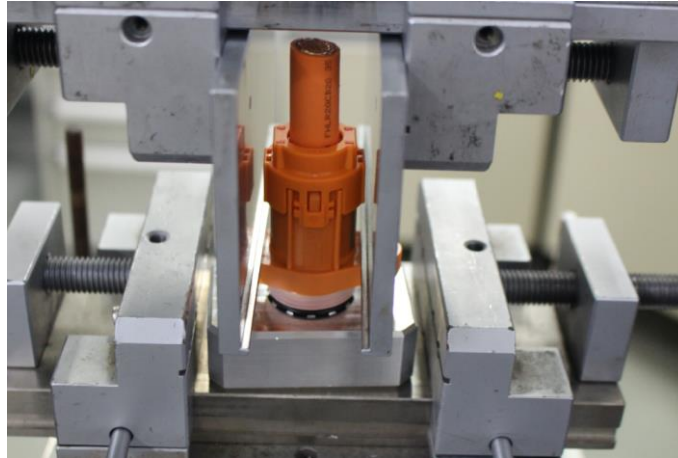
3.2 Technical data sheet

3.2.4 Electrical:	
Voltage Class	B
Voltage range	Up to 1000V DC
Test voltage	3000V AC
Insulation resistance	≥200 MΩ
Current-carrying capacity*	Up to 275A @85°C with 50mm ²
Main contact resistance	NA
HVIL contact resistance	NA
Shielding style	360° shielding
Shielding contact resistance	10 mΩ
Shielding EMI*	2 MHz: < 10 mΩ
	30 MHz: < 50 mΩ
3.2.5 Environmental:	
Test Temperature range	- 40°C to 140°C
Sealing/IP classes	IP6K9K, IP67
Vibration (Profile)	See 3.6 for detail information
Pollution degree application	2
Attitude application	> 4000 m
Typical application	Power conversion (PDU/BDU/Invertor/E-Motor)

*This is the value for the ring terminal without Housing influence , and based on the terminal in applicable document

3.3 Insertion and actuation lock

Typical test setup

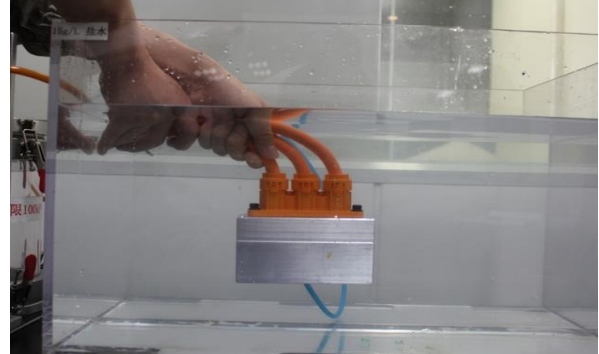
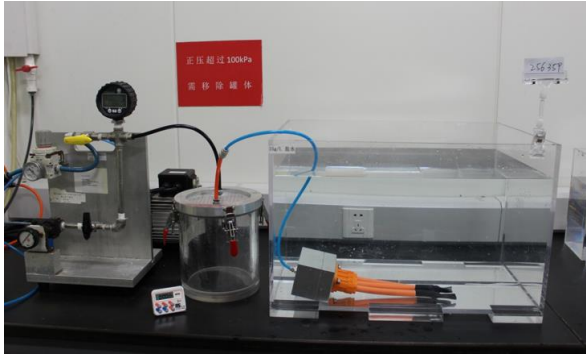


3.4 Derating curve

Please confirm the ring terminal performance from the recommended supplier .

3.5 Connector tightness

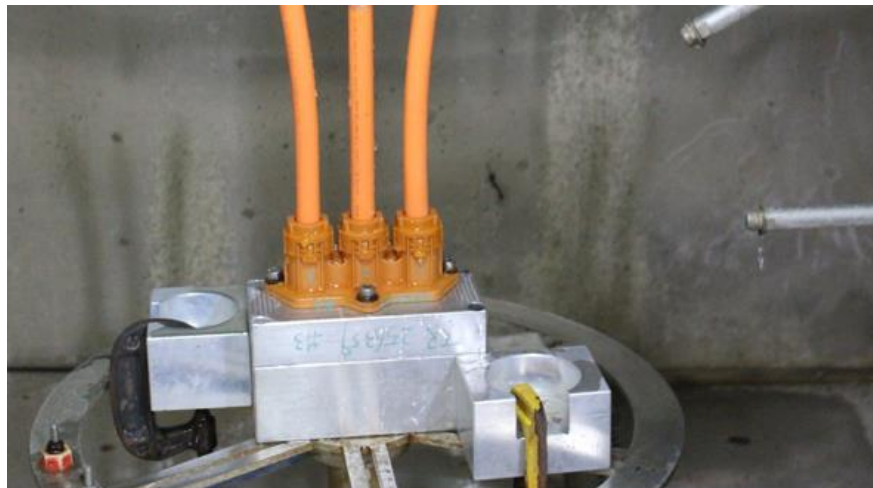
Typical test setup for pressure leak with difference pressure and conducting the line movement



Typical test setup for thermal shock

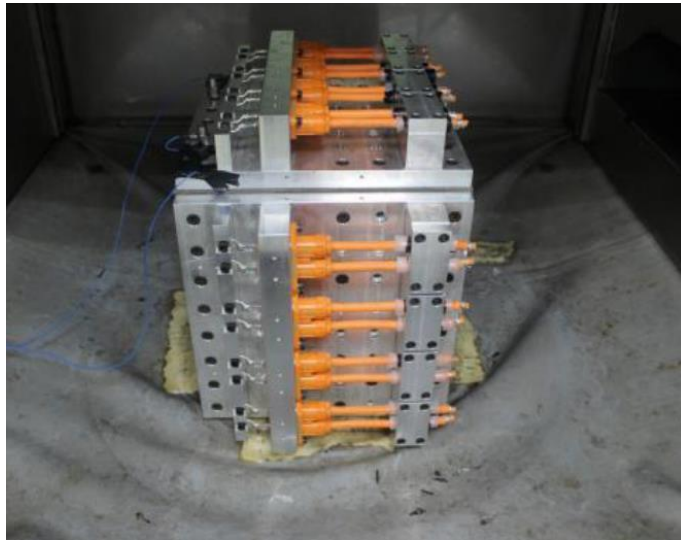


Typical test setup for IP9K



3.6 Dynamic load

3.6.1 Typical test setup



3.6.2 Typical test Profile

TC (temperature cycle)	Random vibration with TC		Sine wave with TC	
0 min/20 °C	22 h per axis		22 h per axis	
60 min/-40 °C	RMS value of acceleration			
90 min/-40 °C	105,5 m/s ²			
240 min/120 °C	Hz	(m/s ²) ² /Hz	Hz	mm
420 min/120 °C	20	10	100	0,095
480 min/20 °C	95	10	Hz	m/s ²
	110	0,01	200	150
	380	0,01	220	150
	410	20	221	100
	800	10	400	100
	1 500	5		

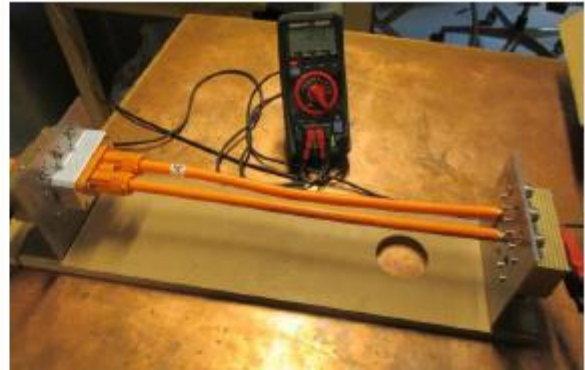
Note: This is the typical profile , if you want to do special one , please contact responsible engineer for the test sample and test setup information.

3.7 EMC test

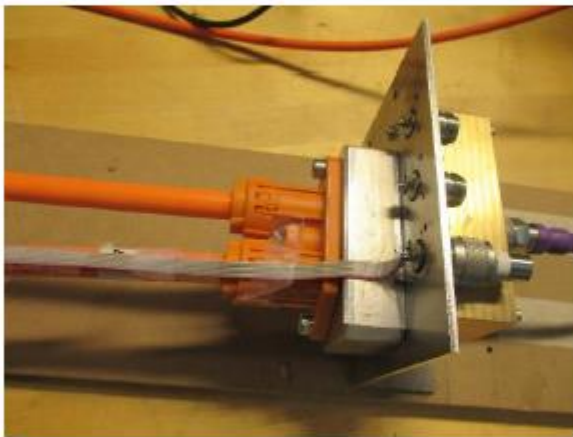
Typical test setup



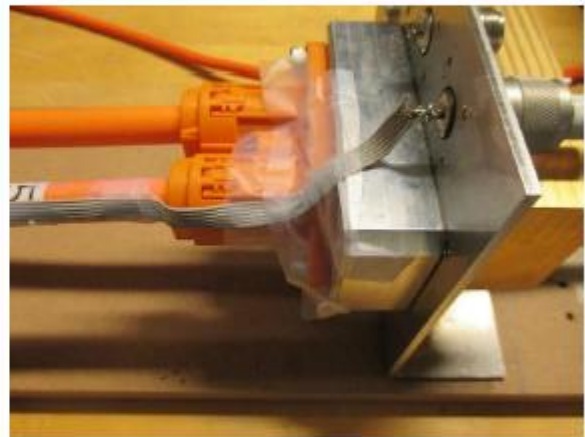
Measurement R_{DC} EUT 1



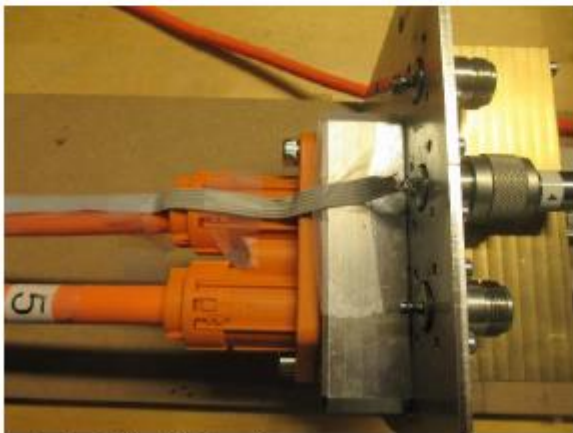
Measurement R_{DC} Overall Test Setup (EUT 1)



Injection Wire Position 1



Injection Wire Position 2



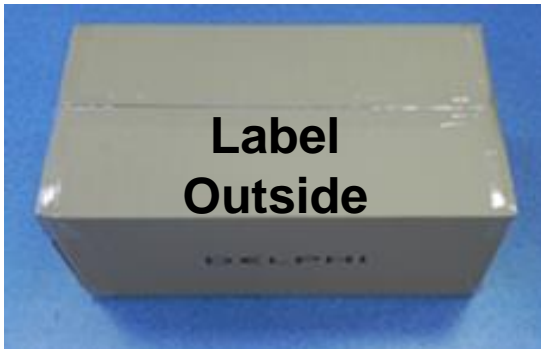
Injection Wire Position 3



Injection Wire Position 4

4 Delivery status

4.1 Delivery status



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REVISIONS

Revision	Change description	Drafter	Checker	Date
Draft 01	Initial Edition	-	-	Jan 17, 2017
Draft 02	Updated Format	-	-	Feb 14, 2017
Draft 03	Updated Format	-	-	Aug 27,2017
01	Released	Weiguo Jiang	Zhang Anyang	Apr.23. 2018

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